

CONTAMINATED LAND RISK ASSESSMENT

DESK TOP STUDY

Jonathan Oliver

**17 South Street
Havant**



Our Ref: SES/JO/SS/1#1

Date: 1st March 2011

Client:

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**17 South Street
Havant**

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1. INTRODUCTION AND OBJECTIVES

The purpose of this assessment is to examine specifically the current and potential risks to human, ecological and ground and surface water receptors associated with possible contamination of the ground at the site located at:

17 South Street
Havant
PO9 1BU

Grid Ref. 471800, 106160

The site is to be developed for residential purposes.

Evaluation of the risks are given and subsequently, if needed, further investigation or remediation recommendations made with regard to risk reduction and or evaluation.

General guidance used:

BS 10175:2001 Investigation of potentially contaminated sites. British Standards Institution, London.

CLR 11: Model procedures for the management of land contamination (2004). Environment Agency.

Environment Agency guidance on requirements for land contamination reports. (2005). Environment Agency.

2. SITE CHARACTERISATION AND FORMER INVESTIGATIONS

Current setting and condition (Drawing 1)

The site assessed for this investigation currently comprises an area of land located on South Street, Havant. The site consists of an unused area of land (Photo 1) with a road to the north (Photo 2). Residential properties bound the site to the east, south and west.

Photo 1



Photo 2



Site history (see Historical maps – Appendix A)

Prior to 1867 (Map 1), two small buildings occupied the site with a 'Parchment Manufactory' located 125 m to the west.

The 1897 map (Map 2) indicates the small buildings on site had been demolished and a small building was marked on the east of the site. The 'Parchment Manufactory' was re-labelled as a 'Parchment Works'

The 1932 (Map 7) map revealed the building on site ceased to be marked and by 1953 (Map 6), the building 4 m west was indicated as a 'Public House' and the 'Parchment Works' west of the site was re-labelled as a 'Builders Yard'.

The 1961-69 map (Map 8) indicates works had been constructed 4 m and 20 m north and 6 m and 22 m north west with a garage marked 24 m south of the site.

By 1973 (Map 9), the works north of the site were marked as engineering works with the former works 6 m north west of the site being labelled as a garage. The works 22 m north west was indicated as a warehouse. The building 4 m west ceased to be marked as a public house and a road had been constructed bounding the north of the site.

The 1982 map reveals the two engineering works north of the site were re-marked as 'works'.

Recent maps and Drawing 1 show no significant changes have occurred on site since 1982. An electricity substation is located 125 m west and residential development has occurred on the former builders yard west of the site.

Local authority information relating to the site history has been requested. No response has been received at the time of this report completion.

Current soils, geology and hydrology

BGS maps 1:50,000 for England and Wales indicate the site is located on Head Gravel which consists of clayey gravel from the Quaternary era.

Flow to groundwater may occur through the soils finding a possible route to the aquifer at depth.

Surface water flow could find a possible route via surface water drains and channels to the west leading to Brockhampton Springs 485m west of the site.

The site is on a variably permeable minor aquifer (Secondary A Superficial Drift, Principal Bedrock aquifer) zone and is not in a groundwater source protection zone.

Former investigations

No former investigations have taken place.

Current environmental data search

Environmental data (Appendix B) indicates the following:

- The site is in a variably permeable minor aquifer zone
- The site is in a Secondary A Superficial Drift aquifer zone
- The site is in a Principal Bedrock aquifer zone
- The site is not in a groundwater source protection zone
- No active landfill sites within 250 m
- No historical landfill sites within 250 m
- No pollution inventory sites within 250 m
- No waste treatment sites within 250 m
- No pollution incidents within 250 m
- Radon is considered to be a risk
- No fuel sites within 250 m

3. CONCEPTUAL SITE MODEL

The conceptual site model detailed here is by a written and diagrammatical (Drawing 1) description of the sources, pathways and receptors. A cross section is included if this will aid interpretation.

3.1 Sources

Possible sources generated on-site

Radon

Radon is deemed to be a risk (see Appendix B). 3-5% of homes are considered to be above the action level of 200 becquerels per cubic metre (Bq m⁻³).

No other sources are considered to have been generated on site.

Possible sources generated off-site

Garages

The garages 6 m north west and 24 m south of the site may have generated potential contaminants (such as metals and hydrocarbons) associated with garage operations.

Works

The works located 4 m and 20 m north of the site may have resulted in potential contaminants (metals, hydrocarbons, solvents) associated with materials and goods stored or used at the site.

Warehouse

The warehouse located 22 m north west of the site may have resulted in potential contaminants (hydrocarbons) associated with heating fuels.

Builders Yard

The builders yard located 125 m west of the site may have generated potential contaminants (metals, sulphides and sulphates and hydrocarbons) associated with materials and goods stored or used at the site.

Electricity sub-station

The electricity sub-station 125 m west of the site may have potentially resulted in ground contaminants such as polychlorinated biphenyls (PCB's) and mineral oils.

3.2 Receptors

Humans

- Residents in the proposed properties.
- Residents in adjacent properties.

Controlled waters

- Brockhampton Springs 485m west of the site.
- The site is in a variably permeable minor aquifer zone
- The site is in a Secondary A Superficial Drift aquifer zone
- The site is in a Principal Bedrock aquifer zone
- The site is not in a groundwater source protection zone.

Ecology

- Animals and plants are considered to be possible receptors.

3.3 Pathways and plausible pollutant linkages (See Table 1)

Pathways to and from the site could exist via service channels.

Human health

The main pathways considered possible are:

1. Ingestion of soil
2. Ingestion of dust
3. Ingestion of vegetables and soil attached to vegetables
4. Dermal contact with soil
5. Dermal contact with dust
6. Inhalation of fugitive soil dust
7. Inhalation of fugitive dust
8. Inhalation of vapours outside
9. Inhalation of vapours inside
10. Ingress to water supplies is also considered

Controlled waters

Flow to groundwater may occur through the soils finding a possible route to the aquifer at depth.

Surface water flow could find a possible route via surface water drains and channels to the west leading to Brockhampton Springs 485m west of the site.

The site is on a variably permeable minor aquifer (Secondary A Superficial Drift, Principal Bedrock aquifer) zone and is not in a groundwater source protection zone.

4. RISK ASSESSMENT

4.1 Human health

Risks from possible sources generated on-site

Radon

Radon is deemed to be risk. Appendix B shows 3-5% of homes are above the action levels of 200 becquerels per cubic metre. Basic protection is required. Contact the Health Protection Agency for further advice.

No other risks are considered to exist as no sources appear to have been generated on the site.

Risks from possible sources generated off-site

Garage

The garage 6 m north west of the site is considered to pose no risk to human health. Given the distance from the site and the topography sloping to the west (away from the site), the migration of potential contaminants is considered unlikely.

Garage

The garage 24 m south of the site is considered to pose no risk to human health. Given the distance from the site and the road and buildings located between the site and the garage restricting pathways, the migration of possible contamination is considered unlikely.

Works

The works located 4 m and 20 m north of the site are considered to pose no risk to human health. Given the road located between the site and the works, and the topography of the land sloping to the west away from the site restricting pathways, the migration of possible contamination is considered unlikely.

Warehouse

The warehouse located 22 m north west of the site is considered to pose no risk to human health. Given the distance from the site and the road and buildings located between the site and the warehouse restricting pathways, the migration of possible contamination is considered unlikely.

Builders Yard

The builders yard located 125 m west of the site is considered to pose no risk to human health. Given the distance from the site and the recent residential development on the builders yard expected to have addressed any issues, the migration of possible contamination is considered unlikely.

Electricity sub-station

The electricity sub-station 125 m west of the site is considered to pose no risk to human health given the distance from the site and the road and buildings located between the site and the substation restricting pathways, the migration of possible contamination is considered unlikely.

4.2 Controlled waters

The site is considered to pose no risk to controlled waters from contamination generated on the site due to no significant sources.

4.3 Ecology

The site is considered to pose no risk to the ecology from contamination generated on or near to the site due to no significant sources or pathways.

TABLE 1. Plausible pollutant linkage/pathway matrix											Y = yes, N = no, Blank = not possible											CSM	Ref	No.	1	Version	a
SOURCE	Chemicals		RECEPTORS																								
		Possible present 1 yes, 0 no	On site								Off site																
	Type		Current workers	Future workers	Dev,ment workers	Current residents	Future residents	Ground water	Surface water	Ecology	Current workers	Future workers	Dev,ment workers	Current residents	Future residents	Ground water	Surface water	Ecology									
ON SITE																											
Radon	Radon	1	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N									
OFF SITE																											
Garages	Metals	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Hydrocarbons	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
Works	Metals	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Solvents	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
Warehouse	Hydrocarbons	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Hydrocarbons	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
Electric sub-station	PCB's	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Mineral Oils	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
Former builders yard	Metals	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Sulphides and Sulphates	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
	Hydrocarbons	0	N	N	N	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA									
Notes	For sources and contaminants see Section 3.1 of the report.																										
	For receptors and plausible linkages see Sections 3.2 and 3.3 of the report.																										
	For risks from sources on-site and sources off-site see Section 4 of the report.																										

5. UNCERTAINTIES AND PHASE 2 PROPOSALS

Radon is deemed to be risk. 3-5% of homes are above the action levels of 200 becquerels per cubic metre. Basic protection is required. Contact the Health Protection Agency for further advice.

Telephone 01235 831600
Fax 01235 833891
Email rpdp@hpa-rp.org.uk

No other significant uncertainties are considered to exist.

Therefore no Phase 2 investigation is considered to be needed.

DRAWING 1

Current site location

NOTES:

 Site boundary

 Potential surface water flow

Soil Environment Services Ltd

Contaminated Land Risk Assessment

Tel.: 0191 243 0686

www.soilenviromentservices.co.uk

Drawing Title: Current site location

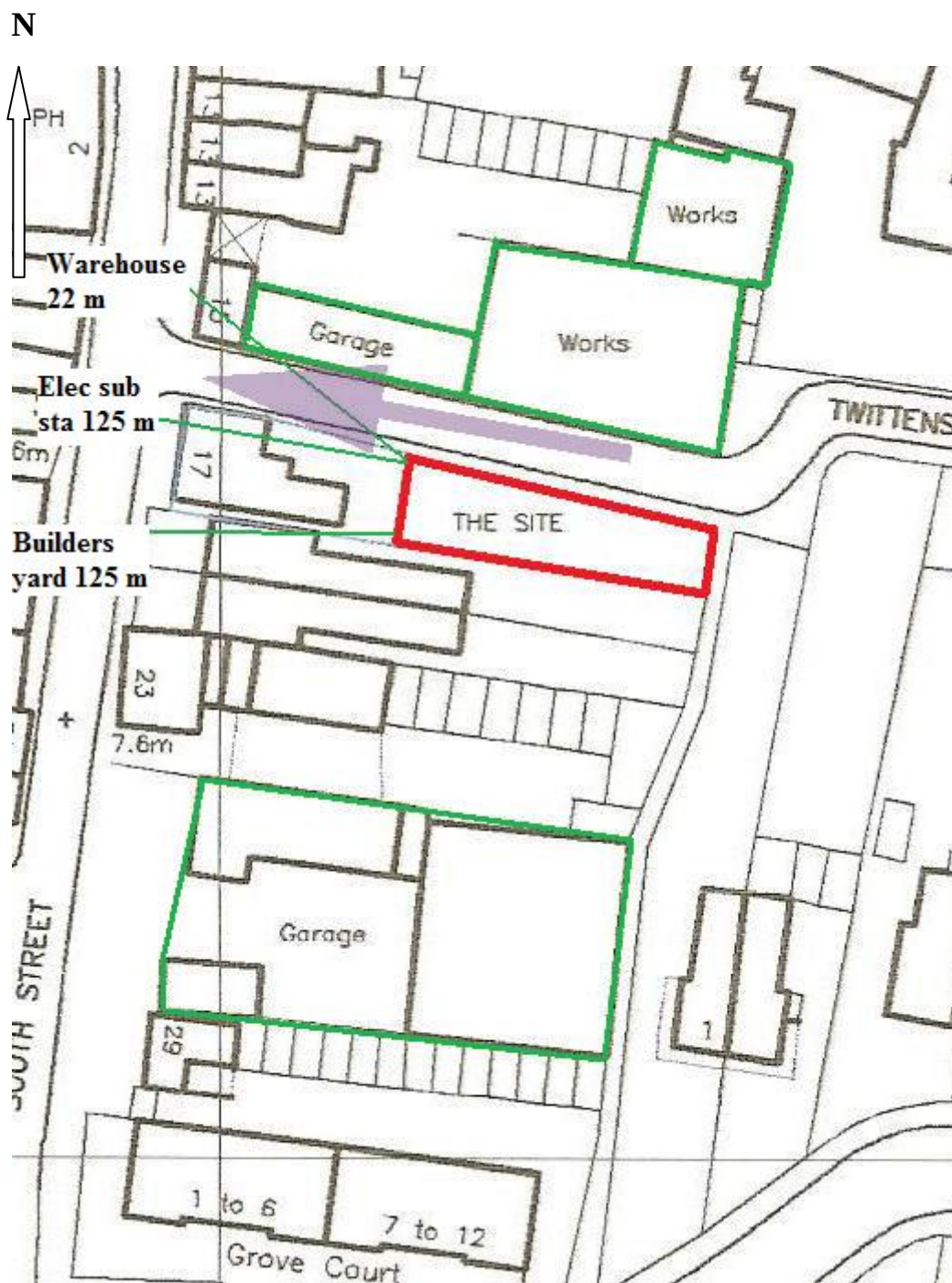
Drawing No.: 1

Client: Mr J Oliver

Project: 17 South Street

Scale: 1:750

Date: 28th February 2011



APPENDIX A

Historical maps

APPENDIX B

Environmental Data